Basic Algebra Review

Name: Key Period:

Before diving in to problem solving with physical applications, let's review the necessary elements of algebra that you will need in this course.

Show all your work!!!

1. $2x+6=0$

$-6 \quad -6$

$\frac{2x}{2} = \frac{-6}{2}$

$x = -3$

2. $x-6=4$

$+6 \quad +6$

$x = 10$

3. $y+8=12$

$-8 \quad -8$

$y = 4$

4. $3y+1=16$

$-1 \quad -1$

$\frac{3y}{3} = \frac{15}{3}$

$y = 5$

5. $6y=24$

$\frac{6y}{6} = \frac{24}{6}$

$y = 4$

6. $\frac{y}{8} = 2$

$y = 16$

7. $\frac{z}{12} = 1$

$z = 12$

8. $\frac{10}{x} = 5$

* if x in denominator, you can switch with what is on other side of "="

$\frac{10}{5} = x$

$x = 2$

9. $\frac{39}{x} = 3$

switch!

$\frac{39}{3} = x$

$13 = x$

if not, then long way:

① $\frac{39}{x} = \frac{3}{1}$

② $\frac{3x}{3} = \frac{39}{3}$

③ $x = 13$

10. $x^2 = 16$

$x = 4$

11. $x^2=16+9$

$\sqrt{x^2}=\sqrt{25}$

$x=5$

12. $x^2+5=41$

$-5\ \ -5$

$\sqrt{x^2}=\sqrt{36}$

$x=6$

13. $\frac{x^2}{4}=4$

$\sqrt{16}=\sqrt{x^2}$

$x=4$

14. $\frac{x^2}{3}=27$

$\sqrt{x^2}=\sqrt{81}$

$x=9$

15. $\frac{40}{x^2}=10$ ★can switch b/c x in denominator (even x^2!)

$\frac{40}{10}=x^2$

$\sqrt{4}=\sqrt{x^2}$

$x=2$

16. $\frac{27}{x^2}=3$ ★switch!

$\frac{27}{3}=x^2$

$9=x^2$ $x=3$

17. $10=4+3x$

$-4\ \ -4$

$\frac{6}{3}=\frac{3x}{3}$

$2=x$

18. $8=\frac{1}{2}x^2$

2 options

double both sides

$2\cdot 8=\frac{1}{2}x^2(2)$

$\sqrt{16}=\sqrt{x^2}$

$4=x$

divide by $\frac{1}{2}$

$\frac{8}{\frac{1}{2}}=\frac{\frac{1}{2}x^2}{\frac{1}{2}}$

$\sqrt{16}=\sqrt{x^2}$

$4=x$

19. $18=\frac{1}{2}x^2\cdot 2$

$\sqrt{36}=\sqrt{x^2}$

$6=x$

20. $32=\frac{1}{2}y(4^2)$ ← do first

$32=\frac{1}{2}(y)(16)$

$\frac{32}{8}=\frac{8y}{8}$

$4=y$

21. $z^2=3^2+(2)(8)$

$z^2=9+16$

$\sqrt{z^2}=\sqrt{25}$

$z=5$

22. $12^2=x^2+23$

$144=x^2+23$

$-23\ \ -23$

$\sqrt{121}=\sqrt{x^2}$

$x=11$